

1. (Amended once) A transfer module for passing a small portion of a continuous high flow rate primary stream of dissolved analytes along a continuous secondary path stream leading to an analyzer for analysis of the analyte while flowing most of the primary stream along a main path while said small portion of said primary stream flows along a secondary path, comprising:

a stator means having a pair of primary stator passages and a pair of secondary stator passages;

a shuttle that has an aliquot passage with opposite end portions, said shuttle being movable between first and second positions relative to said stator;

each of said opposite end portions of said aliquot passage ~~are each~~ is aligned with ~~at least~~ one of said primary stator passages in said first shuttle position and said aliquot passage opposite end portions are each aligned with a different one of said secondary stator passages in said second shuttle position, to thereby move a sample of fluid flowing along said primary stream into said secondary path;

an actuator connected to said shuttle, said actuator being constructed to automatically move said shuttle repeatedly between only said first and second positions.

3. (Amended once) The transfer module described in claim 1 including:

a bypass that has a large enough cross-section to pass fluid therethrough at a flow rate that is a plurality of times the flow rate through said aliquot passage for the same pressure drop across them;

said bypass ~~connecting~~ connected in parallel with said primary stator passages. ~~in series, and connecting said aliquot passage in parallel with said primary passages when said aliquot passage lies in said first shuttle position and said bypass continuing to flow fluid through said primary passages in series when said aliquot passage does not lie in said first position.~~

4. (Amended once) The transfer module described in claim 1 wherein:

a first (172) of said pair of primary passages has a first proximal end that is closest to said shuttle, said first proximal end having highflow and lowflow (190) end parts, and the second of said pair of primary stator passages has a second proximal end with highflow and lowflow (191) second proximal end parts;

5           said shuttle has a highflow passage (176) that is aligned with said first and second highflow end parts in both said first and second shuttle positions, and said aliquot passage opposite end portions are aligned with said lowflow end parts of said primary stator passages in said first shuttle position.

5. (Amended once) The transfer module described in claim 1 wherein:

10           said stator means includes a single stator part having a proximal stator face, with both of said primary passages and both of said secondary passages open at on said proximal stator face, and said shuttle has a proximal shuttle face that lies ~~facewise adjacent to~~ against said proximal stator face;

15           said primary passages have larger cross-sections than said secondary passages;

20           said aliquot passage opposite end portions each lies at on said proximal shuttle face and are spaced apart thereat, with each of said aliquot passage end portions aligned with at least one of said primary passages in said first shuttle position, and with each of said aliquot passage ends aligned with a different one of said secondary passages in said second shuttle position.

6. (Amended once) The transfer module describe in claim 5 wherein:

          said stator means forms a bypass that connects together said pair of primary passages, with said bypass open at said proximal stator face, and with said aliquot passage end portions each open to said bypass in said first shuttle position.

7. (Amended once) The transfer module described in claim 1 including:

5           a source of high pressure fluid that includes a mixture of said analytes with

a mobile phase fluid, said source connected to said primary stream to flow connected to a first of said primary stator passages;

an analyte receiver (108) for receiving analytes which includes a plurality of containers for receiving said analytes, said receiver connected to a second of said primary stator passages;

a source of pressured carrier fluid connected to a first of said secondary stator passage to pump said carrier fluid therein, and an analyzing instrument connected to the other secondary stator passage to receive a sample of said analytes in largely carrier fluid from said aliquot passage.

9. (Amended once) The transfer module described in claim 8 1 including wherein:

said actuator is constructed to repeatedly move said shuttle between said positions at a rate that is on the order of magnitude of one movement back and forth between said shuttle positions per second.

13. (Original) A transfer module for passing a small portion of a high flow rate primary stream of dissolved analytes, to a secondary path for flow of the small portion to an analyzer for analysis of the analytes, comprising:

A stator having a pair of primary stator passages and a pair of secondary passages;

a shuttle that has an aliquot passage with opposite end portions, said shuttle being moveable between first and second positions relative to said stator;

said stator has a single proximal stator face and said shuttle has a single proximal shuttle face that lies facewise against said proximal stator face;

said opposite end portions of said aliquot passage are each open at said proximal shuttle face;

said stator has a bypass where said stator passages are connected together to flow most of the fluid in said primary stream from one to the other of

said primary passages without all of said fluid reaching said proximal stator face, but with said bypass being open to said proximal shuttle face to flow some of the fluid in said primary stream to said aliquot passage in said first position of said shuttle;

said secondary passages have proximal ends that open at said proximal stator face, and said opposite ends of said aliquot passage are each connected with a different one of said secondary passage proximal ends in said second shuttle position.

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14. (Original) The transfer module described in claim 13 wherein:

said shuttle has a plurality of different aliquot chambers with said aliquot passage forming a first of said aliquot chambers, said aliquot chambers having different volumes;

5           said shuttle is moveable between third and fourth positions relative to said stator, with a second of said aliquot chambers having a portion aligned with said bypass in said third shuttle position, and with said second chamber having opposite end portions aligned with said secondary passage proximal ends in said fourth position of said shuttle.

5           18. (New claim) A transfer module for passing a primary stream (24) along a large diameter tube (26) and simultaneously passing a small portion of said primary stream to a secondary path, which includes a stator having a pair of primary stator passages and a pair of secondary stator passages, a shuttle that has an aliquot passage with opposite end portions, said shuttle being movable between first and second positions relative to said stator, said opposite ends of said aliquot passage are each coupled to one of said primary stator passages in said first shuttle position and to one of said secondary stator passages in said second shuttle position, to thereby move a sample of fluid flowing along said primary stream into

10 said secondary path, including:

an actuator mechanically connected to said shuttle and constructed to move said shuttle repeatedly between only said first and second positions, at a rate on the order of magnitude of one movement back and forth between said shuttle positions, per second.

19. (New claim) The transfer module described in claim 18 including:

primary and secondary pumps (16, 134) coupled respectively to said large diameter tube and to one of said stator secondary passages, said secondary pump is constructed to pump at a flow rate less than 10% of the flow rate produced by said primary pump.

20. (New claim) A method for modularly transferring a portion of a high flow rate primary stream to a secondary path, comprising:

flowing at least a portion of said primary stream into a first primary passage of a stator;

5 positioning a shuttle in a first shuttle position wherein an aliquot passage of the shuttle lies in communication with said first primary passage and flowing a portion of fluid flowing into said primary passage, to said aliquot passage to fill said aliquot passage;

10 positioning said shuttle in a second shuttle position relative to said stator to move said aliquot passage to a second aliquot passage position in communication with first and second stator secondary passages, and pumping fluid lying in said aliquot passage toward said secondary path when said shuttle lies in said second position.

15 said steps of positioning said shuttle includes repeatedly moving said shuttle between said first and second positions, at a rate of at least two of said movements every 10 seconds.

21. (New claim) The method described in claim 20 wherein:

said stator has a second primary passage and said stator has a single proximal stator face;

5        said step of flowing a portion of fluid to said aliquot passage to fill it, includes flowing fluid from said first primary passage to said second primary passage through a bypass connection on said stator that is open to said aliquot passage in said first position thereof.

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22. (New claim) The method described in claim 20 including:

flowing almost all fluid passing along said primary stream into a main path;  
flowing fluid from said primary stream along said secondary path at a flow rate no more than about 1% of the flow rate along said main path.